REMARKS/ARGUMENTS

Claims 18-24 were drawn to a non-elected invention. Claims 18-24 have been canceled.

Applicant appreciates the telephonic interview with the Examiner on 24 February, 2006. In the interview, the Applicant discussed the proper priority claim for claims 25-28 and claims 29-30, as also discussed below. Applicant also discussed the prior art of record, particularly the French reference and Evinger, asserting that these references in combination did not obviate the claims. There was no agreement as to the allowability of the claims during the interview.

Claims 25-30 were rejected under 35 U.S.C. § 102 as being anticipated by the disclosure of the Frame Hammer. Applicant respectfully traverses this rejection. Claims 25-28 correspond to method claims that are clearly enabled from the earliest priority application. However, claims 29 and 30 are enabled only from the parent application, namely, U.S. serial number 10/192,544. The intent of this continuation application was to further claim some of the subject matter from the parent application (the subject matter of claims 29 and 30) and to claim method claims enabled from the first priority application. Therefore, with respect to claims 25-28, the rejection under Section 102 should be withdrawn because the Frame Hammer device is not prior art. With respect to claims 29 and 30, Applicant traverses the rejection because there are a number of limitations in these method claims not taught by the Frame Hammer. In the Frame Hammer, the head receiving section is permanently attached to the guide sleeve. More specifically, the head receiving section is simply welded to the guide sleeve. Claim 29 requires that the method include the step of attaching the head receiving section to a distal end of the guide sleeve, the head receiving section including means for removably attaching the head receiving section to the

guide sleeve. The means for removably attaching corresponds to the threads that are formed on the head receiving section enabling the head receiving section to be removed from the guide sleeve. Claim 30 which depends from Claim 29 requires that the head receiving section be detached from the distal end of the guide sleeve, and then reattached the head receiving section. Therefore, this rejection under section 102 should be withdrawn.

Claims 25-30 were rejected under Section 103 as being unpatentable over the Frame Hammer device, in view of the French Patent 912,611, and further in view of Evinger. As stated above with respect to Claims 25-28, the Frame Hammer is not prior art. With respect to the French patent and Evinger, these references alone or in combination fail to disclose the method of Claims 25-28. Claim 25 has been further amended to recite that sliding the plunger in the guide sleeve by maintaining the guide sleeve in a fixed position and moving the plunger at a desired speed to contact the impact head with a desired port. Further, Claim 25 has been amended to recite that the distal stop defines a limit of travel for the impact head and to prevent the impact head from moving beyond the guide sleeve. Independent Claim 27 has been amended similar to Claim 25. Among other deficiencies, the French reference simply fails to disclose the second step in the method of Claim 25, namely, the step of providing the impact head, and also fails to disclose the claimed step of attaching a removable tip to the impact extension. There is no removable tip used in the French reference which is attached to an impact head. Rather, the French reference simply discloses a tool or bit which is received within the guide sleeve of the device, and which is directly contacted by the plunger. Furthermore, the French reference specifically teaches away from any type of removable tip which is attached to an impact

extension element. Enclosed herein is a copy of a translation of the French reference. As explained at page 5, lines 24-29, in order to use various types of tools, the chuck 5 is removed from the tubular body 1. The tool is withdrawn from the threaded end of the chuck, and then another tool is inserted in the chuck and in the guide. The chuck is then screwed on the tubular body. With respect to the Evinger reference, this reference does disclose an attachment component 60 which may be secured to a tip 58 which is positioned in the lower rod 12 (see Figures 5-6). However, as clearly shown in Figure 3, the rod 12 is able to freely slide within the exterior tubes 14. Claim 25 requires a distal stop defining a limit of travel for the claimed impact head, and to prevent the impact head from moving beyond the guide sleeve. This limitation in the second sliding step of Claim 25 clearly teaches away from the method shown in the Evinger reference. Therefore, there is simply no motivation to combine the French reference with Evinger. With respect to Claim 27, this claim also requires a distal stop defining the limit of travel for the means for transferring force, and to prevent the means for transferring force to extend beyond the means for slidably receiving the plunger.

It is also important to note how the attachment component 60 in Evinger is attached to the tip 58. As shown in Figures 5 and 6, the tip 58 is specially designed having a set of threads 59 formed above the working end of the tip, and the component 60 has a set of matching threads 66 engageable with the threads 59. There is no teaching in the French reference of providing a specially designed tip with such unusually located threads above the working end of the tip. Thus, the French reference has to be substantially reconstructed, further indicating no motivation to combine the French reference and Evinger.

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With respect to Claims 29 and 30, as discussed above, the Frame Hammer does not disclose a removable head receiving section. Accordingly, the Frame Hammer nor the French patent nor Evinger disclose the first attaching step which requires the head receiving section to include means for removably attaching the head receiving section to the guide sleeve. Further, Claim 29 requires the head receiving section having a distal stop defining a limit of travel for the impact head. As mentioned above, the French patent and Evinger fail to disclose any type of distal stop. Claim 30 further requires detaching the head receiving section and then reattaching the head receiving section. Also for the same reasons as set forth above, the references of record fail to disclose these further method steps. Therefore, this rejection under Section 103 should be withdrawn.

Based upon the foregoing, Applicants believe that all pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned.

Respectfully submitted,

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PATENT N° 912 611

Improvements made to portable chisels and the like

The invention relates to portable chisels and the like and concerns more especially a portable tool which can be used, amongst other usages, for drilling holes in concrete roads, walls and the like, for extracting coal and other minerals, for demolishing buildings, for descaling or deburring metals such as cast iron, for forming key grooves in shafts, and for removing rivet heads and other similar machining operations.

It concerns more especially a portable tool of the type comprising a tubular body, in one end of which a chisel or other striking member is housed (all being referred to hereinafter as "chisel") and in which there is able to move, in an alternating movement, a plunger carrying, at its external end, a heavy head forming a manoeuvring handle by means of which the plunger can be caused manually to strike the internal end of the chisel in order to oblige the latter to act energetically on the pieces to be worked, and the invention applies more especially to the tools of this type where the chisel can slide in the tubular body of the tool.

Its purpose is especially to improve tools of this type.

It consists principally of making the manoeuvring end of the tubular body, forming part of the tools of the type in question, comprise a retaining member or removable chuck (hereinafter referred to as a chuck) in which the chisel proper is mounted so that it can effect a limited axial sliding movement and which comprises elastic means, housed in the tool, for returning the chisel to its initial position after each blow which it receives from the alternating-movement plunger.

It also consists of housing or mounting the sliding chisel in the removable chuck so that it is exchangeable. In this way the chisel can easily be replaced by removing the chuck, releasing the tool from the latter and replacing it with another.

According to another particularity of the invention, the heavy head, which constitutes the mass mounted on the plunger and which at the same time forms the handle thereof, is made so that it is also exchangeable or preferably having the form of a hollow part which is mounted on one end, with a smaller cross-section, of the plunger so that it is able to be removed and replaced by sleeves or hollow handles having a greater or lesser weight, according to requirements. In this way the tool can be adapted easily and rapidly to various types of work to be performed and, as the chisel can easily be released from the tubular body without in any way affecting the tool plunger, it is possible to remove the chisel rapidly in order to sharpen it or to replace it with a chisel with different dimensions or of another type.

The chisel preferably comprises a non-circular tail which can slide in a passage, of corresponding shape, formed in a guide, provided in the tubular body and which serves to prevent the chisel from turning with respect to the said body. In this way better control of the work of the tool is obtained.

The accompanying drawing shows, by way of example, one embodiment of the invention.

Fig. 1 shows schematically a tool designed according to the invention and as used to descale a cast-iron part.

Figs. 2, 3 and 4 show, respectively in longitudinal section, in transverse section along 3-3 in Fig. 2 and in transverse section along 4-4 in Fig. 2, the tool shown schematically in Fig. 1.

As can be seen in the drawing and, more particularly, in Figs. 2, 3 and 4, the tool comprises a tubular body 1 advantageously formed from a steel tube end, in one end of which there is engaged a sleeve or rim 2 welded to this end and in the other end of which there is engaged a tubular guide 3 for the chisel, this guide also being welded and extending beyond the end of the tube flush with the external face thereof. The guide comprises a thread 4 to which there is fixed a removable chuck 5 supplementing the end of the sleeve. This chuck comprises a pair of opposite solid faces 6 so that a key or other similar tool can be engaged on the said chuck in order to remove the body 1.

The bore 7 of the guide 3 of the chisel has a transverse section whose shape corresponds to that of the tail of the chisel and, for the example shown, a hexagonal shape has been adopted. The chisel, designated in general terms by the reference 8, comprises a conical external end 9 and a tail 10 with a hexagonal cross-section, and it is such that it can slide freely in the bore 7.

Between its ends, the chisel comprises a peripheral rim 11 housed, when the chisel is in use, in an internal annular groove 12 in the chuck 5, and, between this rim and an internal shoulder 13 of the chuck, there is formed a helical compression spring 14 which forces the chisel towards the inside with respect to the tubular body 1 and returns the chisel towards its internal position after it has been driven forwards by the plunger of the tool 15 (described more explicitly below). The spring 14 is therefore housed in the body of the tool and is thus protected.

The front end 16 of the hole provided in the chuck 5 is preferably circular and comprises longitudinal grooves 17, diametrically opposed, in order to facilitate the passage of a chisel having a ribbed end 9 (more particularly in the case where this ribbed end has a greater diameter than the maximum diameter of the tail 10 of the chisel) in the chuck and from the inside thereof, after the said chuck has been removed from the body 1 of the tool.

The chisel can be made from forged metal or formed from tool steel, and the rim 11 of the chuck can form an integral part thereof or be welded or otherwise fixed to the said chisel, as is most suitable in each particular case.

It will be seen that the chisel is mounted or held in the annular groove 12 in the chuck 5, the inside diameter of this groove being sufficiently slack for the rim 11 to be able to move freely therein. The axial movement of the rim and of the chisel is, however, limited by the spring 14 on the one hand and by the external end of the guide 3 on the other hand.

The plunger 15 consists of a rigid metallic rod and is able to slide freely in a tubular body 1. The internal end of the plunger is provided with an end piece 18 extended by a frustoconical part 19 in order to come into contact with the internal end of the chisel 10 and a cylindrical axial rod 20 able to be engaged in an axial hole of corresponding shape in the plunger in which the rod is held by means of a pin 21 joining the said plunger to the said rod.

The end piece 18 comprises a peripheral rim 22 which is in contact with the internal face of the tubular body 1 and which guides the internal end of the plunger in the latter when the main part of the said plunger is not in contact with the said body. The plunger can also slide freely in the sleeve 2 housed in the internal end of the tubular body.

The external end of the plunger is extended by a rod 23 with a smaller cross-section, in the external end of which it is possible to screw a stop 24 which serves to hold a sleeve, a sheath or a handle 25, removably, on the rod.

Several interchangeable handles are provided as indicated in broken lines 26 and 27 in Fig. 2, the arrangement being such that any one of the handles can be used as required for the plunger 15. The various handles which are provided have different weights so that the plunger 15 can be acted on by a force which depends on the

nature of the work which must be carried out with the tool.

A fibre ring 28 is interposed between the internal end of the handle 25 (or any other handle which could replace it) and a steel ring 29 fixed, for example by welding, to the rod 23 of the plunger.

Between the peripheral rim of the sleeve 2 of the tubular body and the ring 29 of the plunger, an annulus 30 is interposed, made from rubber or any other material able to dampen shocks.

In order to use the tool, the workman takes the tubular body 1 of the tool in one hand and applies the point of the chisel to the piece to be worked, approximately as indicated in Fig. 1. He then grips the handle 25 of the tool with the other hand and pulls the plunger out of the tubular body. He then, abruptly and by hand, drives the plunger which carries the heavy handle 25, which obliges the end piece 19 of the plunger to strike the chisel 10 with the result that the latter is driven towards the outside against the work through the effect of the impact received by the plunger and its heavy handle and counter to the action of the spring 14. In this way, the chisel strikes the work and removes a shaving or flake or metal, or flakes of concrete, or performs any other similar operation according to the case for which the tool is being used. The plunger is moved in alternation as described and as often as necessary to finish the work in question.

As already explained above, it is possible to use various types of chisel for the tool, these chisels being interchangeable, it suffices for this purpose to remove the chuck 5 from the tubular body 1, to withdraw the chisel from the threaded end of the chuck, and then to insert another chisel in the chuck and in the guide, and, finally, to screw the chuck once again onto the tubular body. The chisels can be pointed, flat, cruciform, semi-rounded, or have any other appropriate shapes.

According to a variant of the tool described above, the guide of the chisel is omitted

and the chuck is established as the main guide for it. In this case, the chuck is preferably screwed into the body of the tool and somewhat resembles a tubular gudgeon. The spring 14 is then housed in the body of the tool instead of being engaged in the chuck.

Through the object of the invention, a tool is thus obtained having great flexibility and which can be used for a large number of different works, the tool being able to be easily adapted to the various types of work to be performed by replacing the chisel and/or by modifying the weight of the plunger.

SUMMARY

The object of the invention is improvements made to portable chisels and the like of the type specified, which improvements, used separately or in combination, consist in particular of: making the manoeuvring end of the tubular body, forming part of the tools of the type in question, comprise a retaining member or movable chuck (hereinafter designated as a chuck) in which the chisel proper is mounted so that it can perform a limited axial sliding movement, and which comprises elastic means, housed in the tool, for returning the chisel to its initial position after each blow which it receives from the alternating-movement plunger.

Providing, inside the tubular body, at its active end, a tubular guide for the chisel and which comprises an axial passage having the same non-circular shape, in transverse section, as the tail of the chisel.

Housing or mounting the sliding chisel in the removable chuck, so that it is exchangeable.

Screwing the said chuck on the threaded extension of the chisel guide.

Giving the chisel an annular rim which serves to limit its axial movement with respect to the tubular body of the tool and preventing its accidentally emerging from the tool.

Providing in the chuck an annular groove in which the rim of the chisel is housed when the chisel is engaged in the tool, and providing in the said groove a compression spring surrounding the chisel and bearing, at one end, on the rim of the said chisel, and at the other end on a shoulder of the chuck as to force the chisel towards the inside of the tubular body of the tool.

Having recourse to means for holding the alternating-movement plunger in the body whilst keeping the major part of the external face of the plunger out of contact with the internal face of the said body.

Providing the alternating-movement plunger, at one end, with a toughened end piece for coming into contact with the chisel, the said end piece comprising a peripheral rim which serves to centre and guide the internal end of the plunger in the tubular body.

Giving the tubular body, at the opposite end to that where the chisel is situated, an internal sleeve for guiding the alternating-movement plunger in the tubular body.

Making the heavy mass which constitutes the load of the plunger interchangeable.

Giving the said mass the form of a sleeve or a hollow handle, mounted removably on the external end of the alternating-movement plunger.

Providing a series of interchangeable sleeves or handles, for the alternating-movement plunger, these handles having different weights.

And having recourse to damping means provided between the handle of the alternating-movement plunger and the tubular body of the tool.

The invention relates more particularly to certain applications as well as certain embodiments of the said improvements, and relates more particularly still, and this with regard to novel industrial products, to the chisels of the type in question, comprising application of the said improvements, as well as the special elements and tools peculiar to their provision.